

WHAT IS CLAIMED IS:

1. An optical pickup for reading/writing data, comprising:

a convergent optical system, composed of a singlet objective lens having a NA not less than 0.75, for converging output light emitted by a light source on an optical storage medium; and

an aberration-correcting optical system for correcting coma aberrations due to an inclination or shift of central axes of both surfaces of the objective lens or an inclination of the objective lens or the optical storage medium to an optical axis of the optical pickup.

2. The optical pickup as defined in claim 1, wherein

the aberration-correcting optical system is composed of multiple elements, provided on an optical axis of the output light, for either converging or diffusing the output light and is mounted so that at least one of the elements is inclinable relative to the optical axis or movable at right angles to the optical axis.

3. The optical pickup as defined in claim 2, wherein

one of the elements is mounted to be movable in a

direction along the optical axis.

4. The optical pickup as defined in claim 3, wherein
the aberration-correcting optical system corrects
spherical aberrations by moving one of the elements in a
direction along the optical axis, after the aberration-
correcting optical system corrects the coma aberrations
by inclining the elements relative to the optical axis
and moving the elements at right angles to the optical
axis.

5. The optical pickup as defined in claim 4, wherein
the aberration-correcting optical system corrects
the coma aberrations by detecting a shape or wavefront
aberrations of a focused beam spot produced by the
objective lens.

6. The optical pickup as defined in claim 3, further
comprising:

aberration detecting means for detecting the coma or
spherical aberrations based on a return light which is
the output light reflected at the optical storage medium;
and

element drive means for inclining the elements
relative to the optical axis and moving the elements at

right angles to the optical axis to correct the coma aberrations and also for moving at least one of the elements in a direction along the optical axis to correct the spherical aberrations, all based on a detection result given by the aberration detecting means.

7. The optical pickup as defined in claim 1, wherein

the aberration-correcting optical system is composed of elements arranged in two separate groups, each group including at least one of the elements for either converging or diffusing the output light.

8. The optical pickup as defined in claim 7, wherein

one of the two groups has a positive refraction power, and the other group has a negative refraction power.

9. The optical pickup as defined in claim 8, wherein

at least one of the two groups is mounted to be movable in a direction along the optical axis.

10. The optical pickup as defined in claim 8, wherein

the group with a positive refraction power is disposed relatively close to the optical storage medium, and the group with a negative refraction power is

disposed relatively close to the light source.

11. The optical pickup as defined in claim 8, wherein
the group with a negative refraction power is composed of a single lens made of a material having an Abbe constant of not more than 40.
12. The optical pickup as defined in claim 3, wherein
the aberration-correcting optical system includes achromatic doublets as the elements.
13. The optical pickup as defined in claim 3, wherein
the aberration-correcting optical system includes lenses, each having at least one aspheric surface, as the elements.
14. The optical pickup as defined in claim 3, wherein
the aberration-correcting optical system includes wavefront converting means for converting a wavefront as the elements.
15. The optical pickup as defined in claim 14, wherein
the wavefront converting means is either a liquid crystal element or a diffraction optical element.

16. The optical pickup as defined in claim 15, wherein
the diffraction optical element is of either a blaze
type or a binary type.

17. The optical pickup as defined in claim 1, wherein
the objective lens is composed of a single lens.

18. The optical pickup as defined in claim 1, wherein
the objective lens is a doublet.

19. The optical pickup as defined in claim 1, wherein
the objective lens includes a material having an
index of refraction of not less than 1.75 for at least
one wavelength actually used in the optical pickup.